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10/580,684	05/26/2006	Elena Herrera Orendain	7008-1012	4980
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EXAMINER				
KOSAR, AARON J				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/580,684

Applicant(s)

HERRERA ORENDAIN ET AL.

Examiner

AARON J. KOSAR

Art Unit

1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-29 is/are pending in the application.
4a) Of the above claim(s) 7-11 and 29 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 12-28 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 26 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SI/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Applicant's amendment and argument filed May 22, 2008 in response to the non-final rejection are acknowledged and have been fully considered. Any rejection and/or objection not specifically addressed is herein withdrawn.

Applicant has amended the claims by canceling claims 4-6 and introducing new claims 7-29. Claims 7-29 are pending, of which claims 7-11 and 29 are withdrawn (see Election/Restrictions and Note Regarding Rejoinder Practice, below).

Claims 12-28 are pending and have been examined on their merits.

Election/Restrictions

Newly submitted claim 7-11 and 29 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Whereas original claims 4-6 were rejected broadly as presenting multiple invention classes within the claims, said claims were ultimately treated on the merits as an invention classified as a process of treating stillage (see 1st line of claims 4-6; Office Action 1/22/2008, page 4, last ¶).

The newly presented claims have presented process claims and have newly introduced apparatus claims, the inventions grouped as follows:

- I. Claims 7 and 9, drawn to a steam-liquid heat exchanger apparatus.
- II. Claims 8, 10, and 11, drawn to a stillage evaporator apparatus.
- III. Claims 12-28, drawn to a method of stillage treatment.

Claim 29 is generic to and links invention groups I and II.

The instant claims are independent and distinct from the original claims. In contrast to the apparatus required by/described by the method of the original claims, the method of claims 12-

28 does not require the use of the apparatus as originally claimed or the instant apparati, for example when the operating level is not 15,000 liters. Also, the instantly claimed apparati are not limited to use in the method of claims 12-28 and may be used with methods other compositions and other stillage than from tequila distillation.

Furthermore, the original claims were treated on the merits to the extent of one invention only (a method/process according to 37 CFR 1.475(a)). In light of this, the subsequent amended/new claims are drawn to a method/process and additionally introduces two inventions classified as apparati; however, **since applicant has received an action on the merits for the originally presented invention corresponding to the subject matter of group III, the invention has been constructively elected by original presentation for prosecution on the merits.** Accordingly, claims 7-11 and 29 are withdrawn from consideration as being directed to non-elected inventions. See 37 CFR 1.142(b) and MPEP § 821.03.

Note Regarding Rejoinder Practice

The claims have been treated as restricted between product (apparatus/apparati) and process claims, wherein the process claims have been elected by original presentation.

Current rejoinder practice is as stated in the following:

Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

*In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.*

Claim Rejections - 35 USC § 112

Drawings

The drawings are objected to because Figure 4 (the box in column 4, row 2; column 4, box 2) refers to a “2nd storage pump” and “cyclon” which appear to be an inadvertent/typographical errors of the originally disclosed “2nd storage tank” and “cyclone”. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be

labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

On page 7, line 1, in the phrase “them to sediment...”, the terms “them to” appear to be inadvertent artifacts from the original foreign-language document; however, the deletion of said terms would be sufficient to conform with current US grammatical practice.

Appropriate correction is required.

Claim Objections

Claims 12-28 are objected to because of the following informalities:

In claim 12, step (1) the phrase “a temperature in the range of 80 and 85°C” appears to be an inadvertent error of “a temperature of 80 to 85°C” or “a temperature between 80 and 85°C”. In step (2) the unit of pressure appears to inadvertently omit the superscript from the pressure unit “kg/cm²”.

In claim 24, the term “5 to 10” appears to have inadvertently omitted the unit of measure.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-28 are rejected as being an incomplete method (process) for omitting essential steps. While all of the technical details of a method need not be recited, the claims should include enough information to clearly and accurately describe the invention and how it is to be practiced. The minimum requirements for method steps minimally include the active steps of a *contacting step* in which the reaction of the sample with the reagents necessary for the assay is recited, a *detecting or reacting step* in which the reaction steps necessary for the claimed reaction/transformation are effected, and a *correlating/concluding step* describing how the active steps of the method allow for the result. Also, claims are incomplete in the absence of a recovery step for the product produced. In the instant claims, it is unclear what product, if any, correlates to and is commensurate with a resultant “treatment of stillage” product, rendering the claims indefinite, as one of skill would not be apprised as to how the method steps correlate/conclude with a resultant product required by the method.

Also, while there is no specific rule or statutory requirement which specifically addresses the need for a recovery step in a process of preparing a composition, it is clear from the record and would be expected from conventional preparation processes that the resultant product must be isolated or recovered. Thus the claims fail to particularly point out and distinctly claim the “complete” process since the recovery step is missing from the claims. The metes and bounds of the claimed process are therefore not clearly established or delineated.

Please note, that phrases, including the phrase “will yield” (claim 12, step (5)), “will depend” (claims 14 and 15), and “will be needed” (claim 16) are not active steps and, therefore, do not indicate whether the elements are required of merely exemplary of the claimed process/method.

Claims 12-28 are also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation “said stillage evaporator in step (5)” in step (5). There is insufficient antecedent basis for this limitation in the claim. Please note, for the sake of compact prosecution, the claim has been treated as depending from said evaporator “in step (4)”; however, this does not absolve Applicant of the requirement to appropriately amend the claims. Claim 12 also recites the term “*the* preparation of alcoholic beverage tequila”. There is insufficient antecedent basis for this limitation in the claim. There is insufficient antecedent basis for the limitations in the claim. Thus one would not be apprised as to the subject matter Applicant intends by the claims.

Claim 23 recites the limitation “the evaporation time in step (4)”. There is insufficient antecedent basis for this limitation in the claim, because claim 12, step (4) recites a speed (rate) of evaporation, but does not correlate or recite an evaporation time. Thus one would not be apprised as to the subject matter Applicant intends by the claims, thereby rendering the claims indefinite.

Claim 28 recites the limitation “the mashers, rectifying stills, or cooking ovens”. There is insufficient antecedent basis for this limitation in the claim, because claims 12 and 27 do not

correlate or recite a masher, rectifying still, or cooking oven component and because said components as evidenced by the phrase "and is injected into a steam head...into a steam line, and is sent on to..." appear to be not commensurate with a method of producing a treated stillage, but instead appear to indicate further steps beyond the alleged product made (e.g. method of making a purified steam vs. method of using said steam). Thus one would not be apprised as to the subject matter Applicant intends by the claims, thereby rendering the claims indefinite. Please note, however, with respect to claim 28, this ground may be overcome, for example, by amending the claim to recite the limitations of the product produced and not subsequent manipulations or method of use thereof.

Claim 13 recites a "biochemical oxygen demand" (BOD) of 15.2 kg/L and an apparent subset "soluble biochemical oxygen demand" (sBOD) of 21.1 kg/L. The terms are unclear, because it is unclear how a sBOD may be greater than BOD. Thus one would not be apprised as to the subject matter Applicant intends by the claims, thereby rendering the claims indefinite.

Claim 16 recites the term "a load of $0.11\text{m}^3/\text{hrs} - 110\text{ l/hr}$ " and the phrase "a vertical pump 6000-8000 mg/liter" which are unclear. The terms are unclear because it is unclear what components the terms describe, whether the units are compatible in describing separate components (i.e. (solids) m^3/hrs versus (liquids) l/hr) or whether the terms are attempting to describe a range using separate units of measure for each end of the range. Furthermore it is unclear how the "pump" or some undisclosed component are correlated to or further described by "6000-8000 mg/liter". Furthermore, in claim 20, the unit of measure "ppm mg/l" appears to be a combination of two concentration units "ppm" and "mg/l" each of which defines different metes and bounds. Since each of the interpretations are broad and reasonable interpretations of

the claims, and because each embraces different subject matter, one would not be apprised of the subject matter Applicant intends by the claims, thereby rendering the claims indefinite.

Claims 12 recites the term “clean steam...is injected and controlled by a disk valve at a pressure of...” in step (3); the term “steam with the quality of water vapor” in steps (4) and (5); and the terms “them” and “intensity of which” in step (4). The terms of step (3) are unclear, because step (3) recites multiple objects which may be broadly and reasonably interpreted as the object of the pressure, including steam and a disk valve. It is unclear from the claims what object Applicant intends to direct the “pressure of 3 kg/cm²” term. The terms of steps (4) and (5) are unclear, because the claim recites a purification of which does not distinguish the product steam from the reagent steam as both have the quality of water vapor. The terms of step (4) are unclear, because the claim recites multiple potential objects of said “intensity” and/or “them” (i.e. tangential effect, steam, pressure, velocity, impact, turbulence, etc.). Each is a reasonable interpretation of the claim though each embraces different subject matter. Thus, one would not be apprised as to the subject matter Applicant intends by the claims, thereby rendering the claims indefinite. Please note, however, the above rejection with respect to “them” may be overcome, for example by amending to recite the object(s) to which the term refers (e.g. “said particles”)

Claims 19 recites the term “the solids from step (2) in claims 12. The term is unclear, because step (2) recites multiple solid species, including an uncentrifuged stillage comprising solids, a solid separated/centrifuged from liquid, and a low-solid liquid stillage. It is unclear from the claims what solid Applicant intends by the term, one would not be apprised as to the subject matter Applicant intends by the claims, thereby rendering the claims indefinite.

Claims 12-19 and 21-28 are also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites in step (2) the terms "low concentration" and "optimum temperature conditions" which are relative terms, rendering the claims indefinite. The terms "low" and "optimum" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Thus, one would not be apprised as to the metes and bounds of the concentrations of solids or optimum temperatures/temperature ranges that Applicant intends to embrace by the claims, thereby rendering the claims indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over VANDER GRIEND (D:PTO-892 5/5/2008: US 7,297,236 B1).

The claims are generally drawn to a process of treating stillage minimally requiring (1) discharging stillage into a 1st tank, providing a temperature of 80-85°C; and (2) phase separating the solids and liquids by centrifugal force, including transferring the liquid stillage to a 2nd tank.

VANDER GRIEND teaches ethanol fermentation/distillation and the obtaining of stillage (bottoms); the transfer of said stillage into a centrifuge (410) and centrifugation to provide thin stillage; the separation of ethanol (560) and mid stillage (550) and steam (528) and the further

separation of said mid stillage into syrup (582) and steam (562). Vander Griend also teaches that the steam (528, 562) are used in the process and may be reapplied/recycled in other reactions (e.g. fermentation (128) and/or slurry (128) tanks). Vander Griend further teaches steam temperatures and pressures of 85-88, 96, and 99-107°C (185-190, 205, and 210-225°F) and pressures of 0.7, 0.95, and 1.03-1.39 kg/cm² (column 6 and 7).

To the extent that Vander Griend may be silent versus the instant claims with respect to a temperature of 80-85°C or a specific pressure, it would have been obvious to one skilled in the art at the time of invention to determine all optimum and operable conditions (e.g. (i) temperature, (ii) residence times, (iii) optimal volumes), because Vander Griend teaches (i) the general contacting of stillage with steam and the general conditions of providing steam across a range of steam pressure:temperature combinations (i.e. water vapor phase-/temperature-/pressure-dependent combinations), (ii) changing flow rates (e.g. (582)), and (iii) production on the industrial-scale (e.g. fuel grade ethanol; ethanol distillation facilities); and because such conditions are art-recognized result-effective variables that are routinely determined and optimized in the art through routine experimentation. ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *See* MPEP § 2145.05).

Additionally, to the extent Vander Griend recites an origin of stillage from an origin other than that instantly claimed, the compositions provided by Vander Griend and the instant claims both require to the extent claimed (a) the same starting material composition, stillage, (b) both separate the same components from each other, including partitioning of steam/water vapor,

ethanol, and the residue from which the volatile liquids have been removed, and (c) both are within the field of ethanol production and component isolations thereof. Thus said stillage of Vander Griend embraces the same composition to the extent instantly claimed, especially absent objective evidence to the contrary or the criticality of some undisclosed features/components. Additionally, to the extent that Vander Griend is silent regarding the properties of an acidic pH, BOD, sBOD and total solids of the stillage, since the compositions appear to be the same compositions, and because the property is claimed to be intrinsic to "retained" by the composition, then the composition of Vander Griend would also be expected to intrinsically comprise/retain the properties to the extent claimed.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill in the art might reasonably infer from the teachings. (*In re Opprecht* 12 USPQ 2d 1235, 1236 (Fed Cir. 1989); *In re Bode* 193 USPQ 12 (CCPA) 1976). In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

CHRISTENSEN (A:PTO-892 5/5/2008 US 2,345,238 A) *teaches the treatment of distillery residues and apparatus thereof, including the separation of solids and liquids including separations after alcohol production, the use of a cyclone (73) to accumulate solids.*

VOSS (B:PTO-892 5/5/2008 US 2,567,257 A) *teaches treatment of distiller's slops comprising treating to maintain a pH of 4.5.-6.5 (column 13).*

PASPEK (C:PTO-892 5/5/2008 US 4,981,579 A) *teaches treating a composition by extracting desired components and recycling of volatile solvent (e.g. Figure 4).*

STANDIFORD (E,F :PTO-892 5/5/2008 US 4,381,220 A and US 4,328,074 A) *teach a steam-recycling/-removing apparatus and method, including obtaining said steam from distillery slop.*

VERSER (A1, B1:PTO-892 US 7,351,559 B2 and 6,927,048 B2) *teaches an ethanol producing process wherein ethanol is produced and H₂O and solids are stripped/removed/further isolated (e.g. Figure 4).*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON J. KOSAR whose telephone number is (571)270-3054. The examiner can normally be reached on Monday-Thursday, 7:30AM-5:00PM, ALT. Friday,EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Aaron Kosar
Examiner, Art Unit 1651

/Sandra Saucier/
Primary Examiner, Art Unit 1651